

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
18 December 2003 (18.12.2003)

PCT

(10) International Publication Number
WO 03/104611 A1(51) International Patent Classification⁷: E21B 43/11, 17/10, 43/08, 43/16

(21) International Application Number: PCT/US03/17840

(22) International Filing Date: 6 June 2003 (06.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 60/387,158 6 June 2002 (06.06.2002) US

(71) Applicant (for all designated States except US): SAND CONTROL, INC. [US/US]; 22136 Westheimer Parkway, Suite 202, Katy, TX 77450 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): JOHNSON, Michael, H. [US/US]; 22136 Westheimer Parkway, Suite 202, Katy, TX 77450 (US).

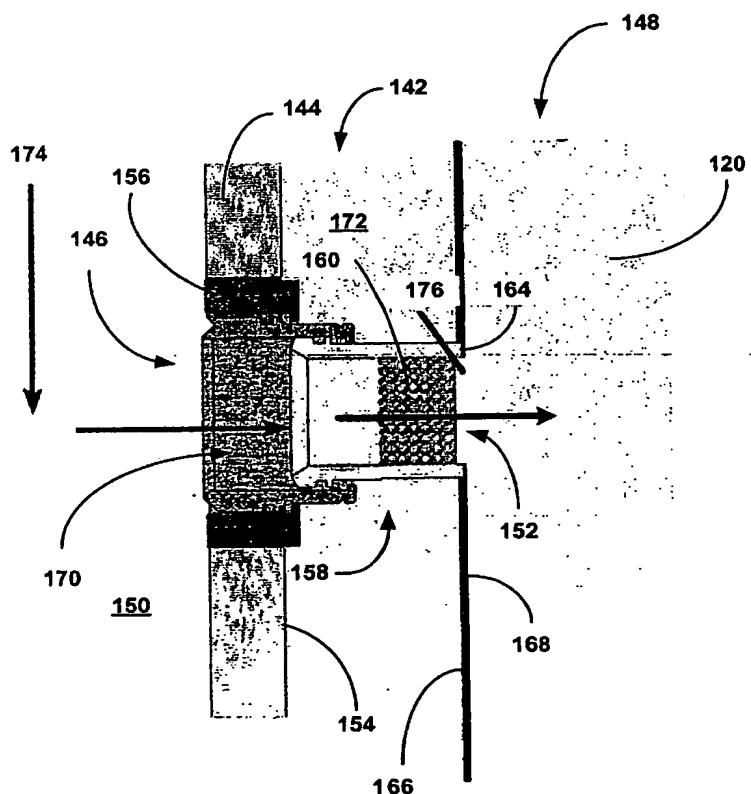
(74) Agent: STROZIER, Robert, W.; Robert W. Strozier, PLLC, P.O. Box 429, Bellaire, TX 77402-0429 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD FOR CONSTRUCTION AND COMPLETION OF INJECTION WELLS



(57) Abstract: A method for well construction and completion is disclosed. Generally the method comprises the steps of 1) drilling through an injection zone, 2) positioning an extendable permeable element on the casing capable of stopping formation material from entering the well bore, 3) positioning the casing such that the extendable elements are aligned with the injection zone, 4) extending the member such that they come into direct contact with the injection zone formation, 5) running tubing/completion equipment, and 6) begin injecting the desired fluids into the well. Thus eliminating the need to perforate and gravel pack the well while improving reliability of the injection well completion.

WO 03/104611 A1



Declaration under Rule 4.17:

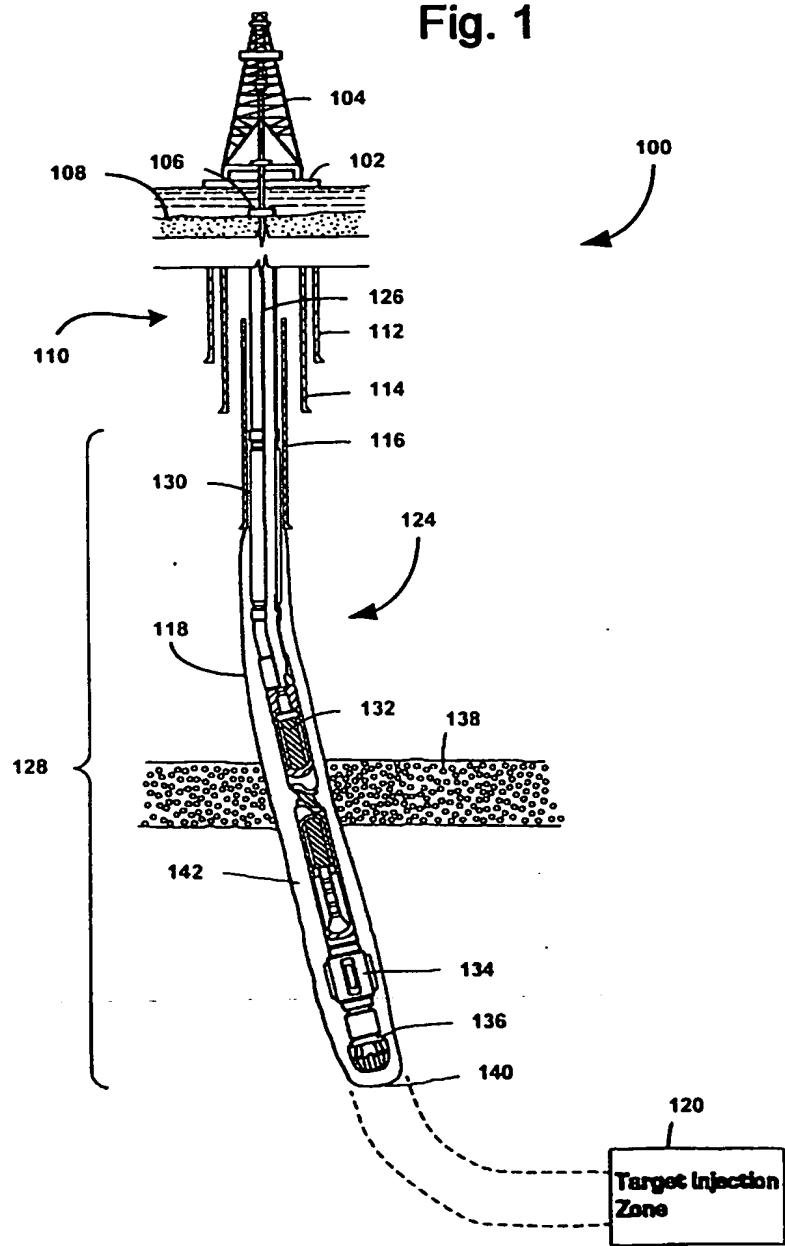
— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Fig. 1



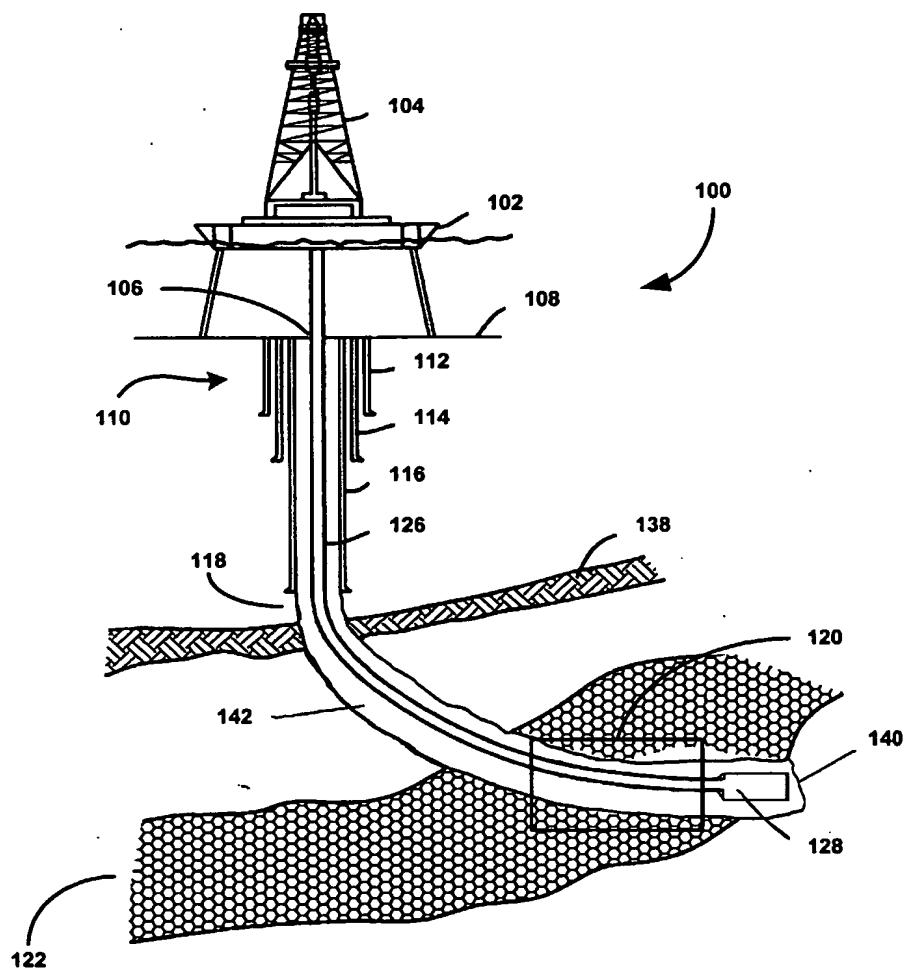


Fig. 2

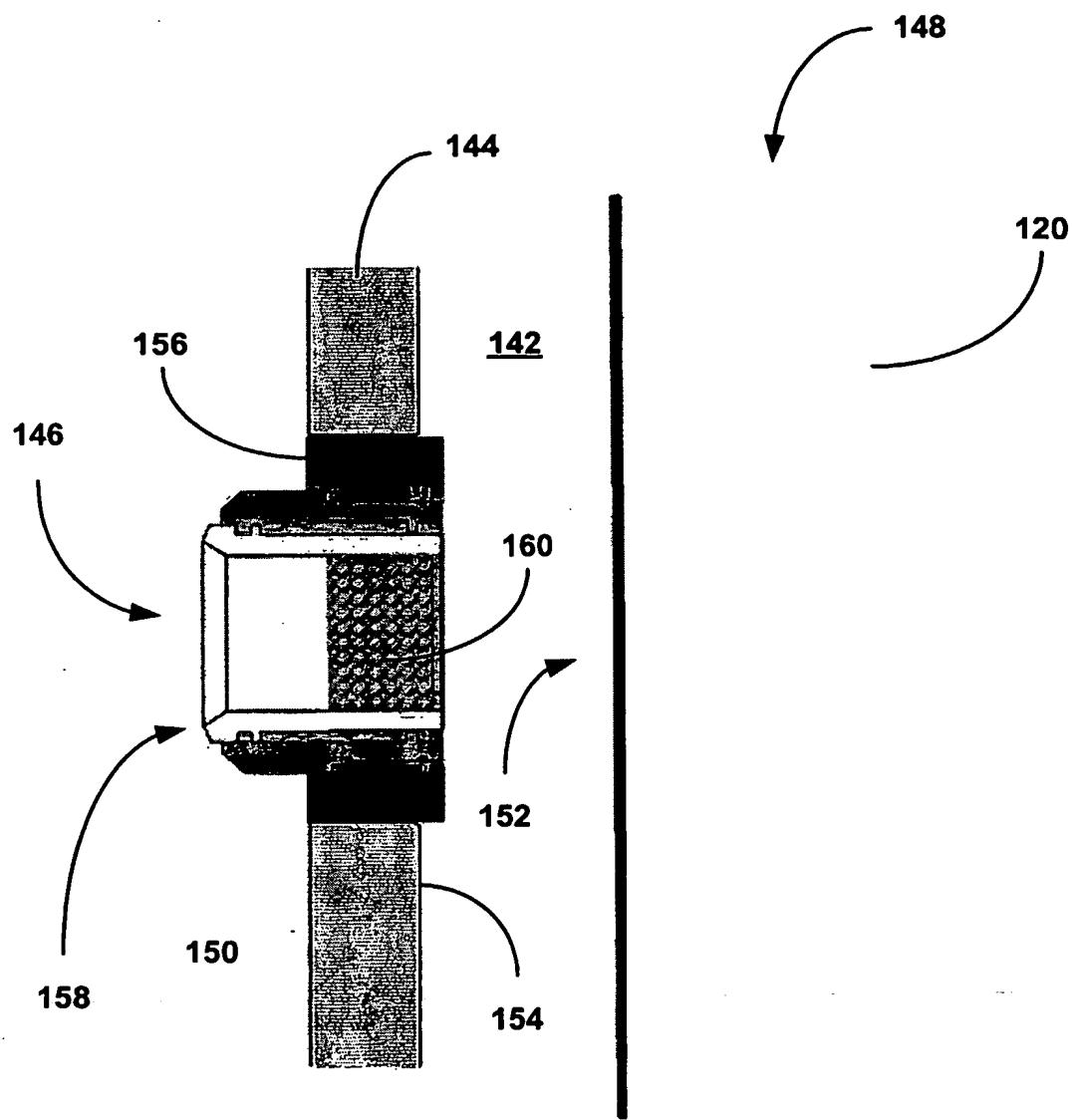
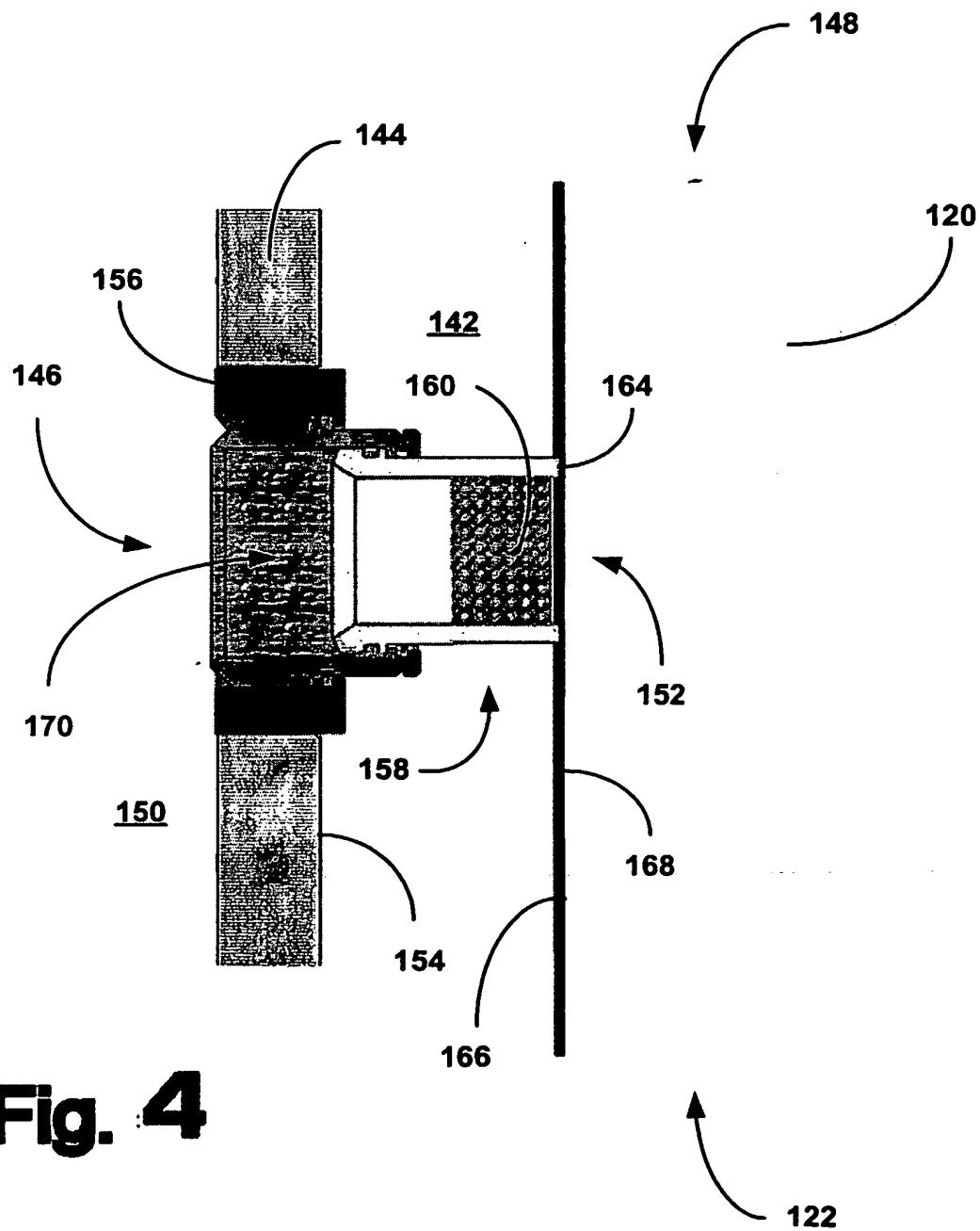


Fig. 3



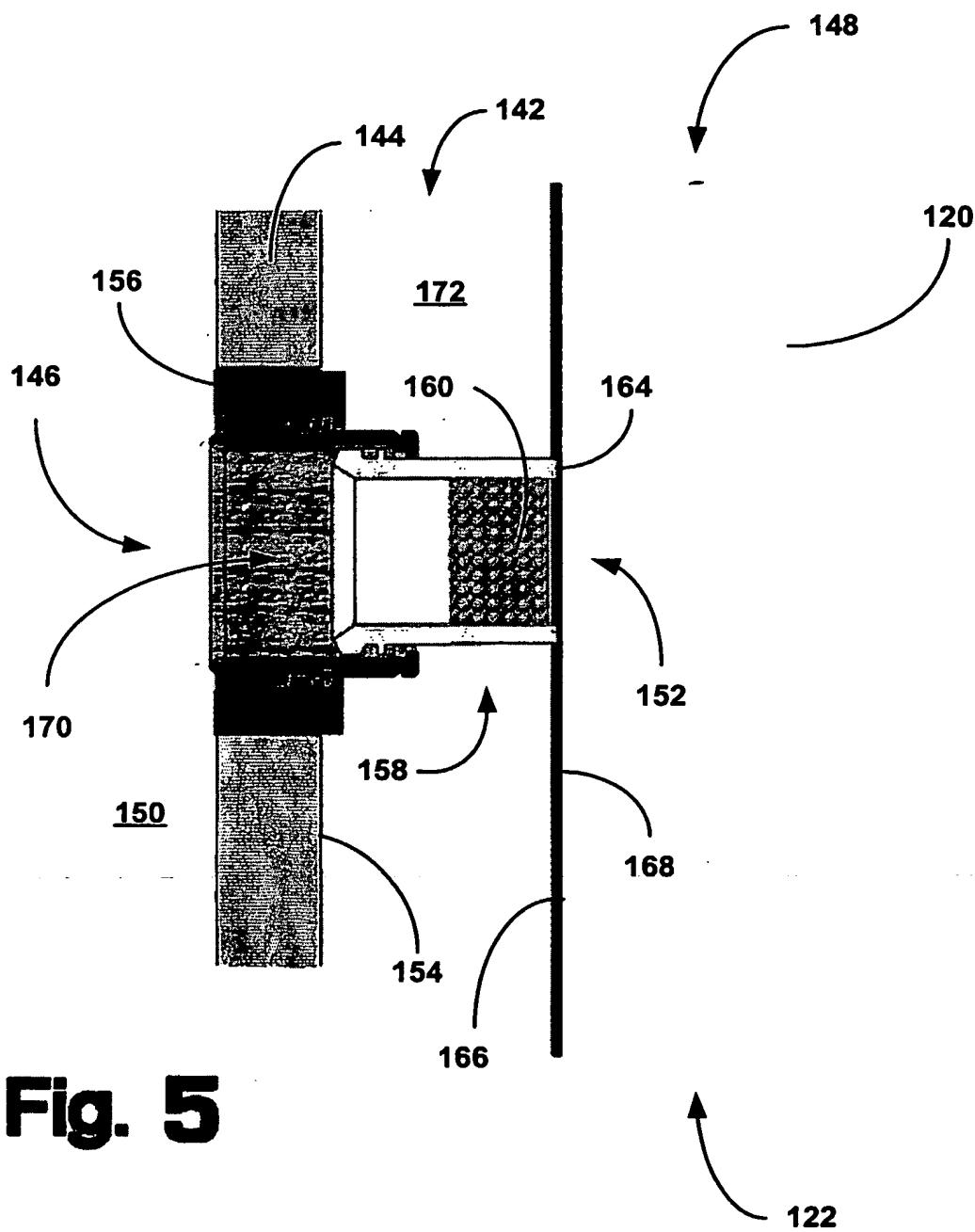


Fig. 5

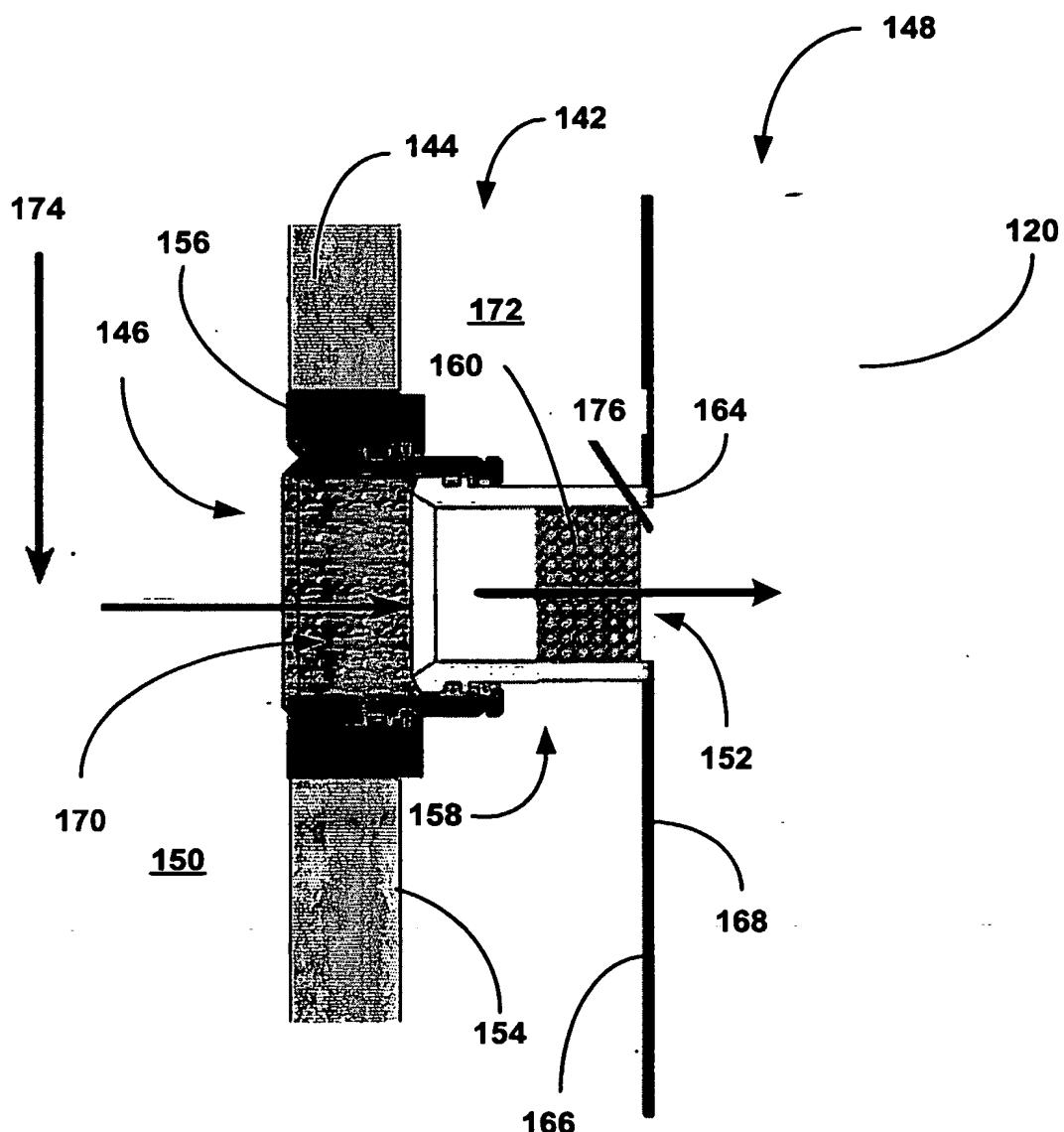
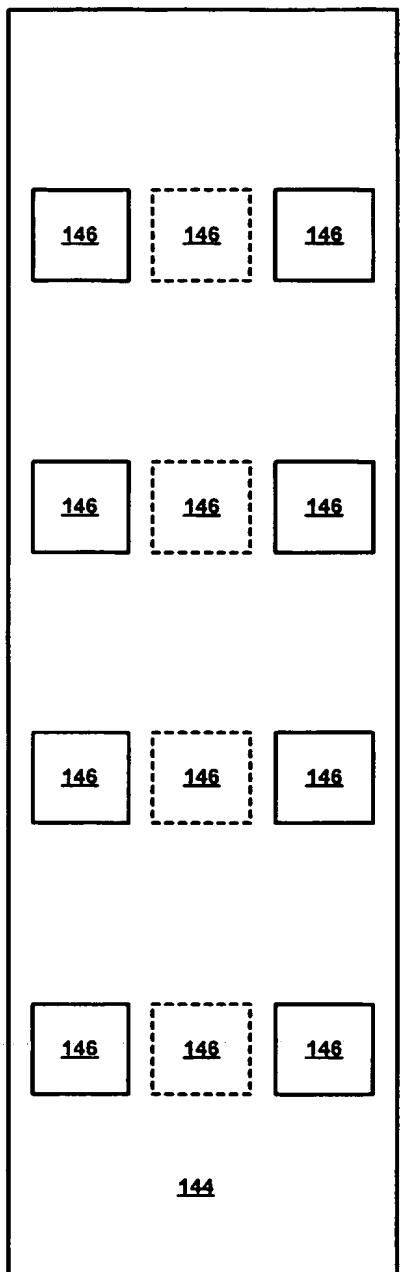
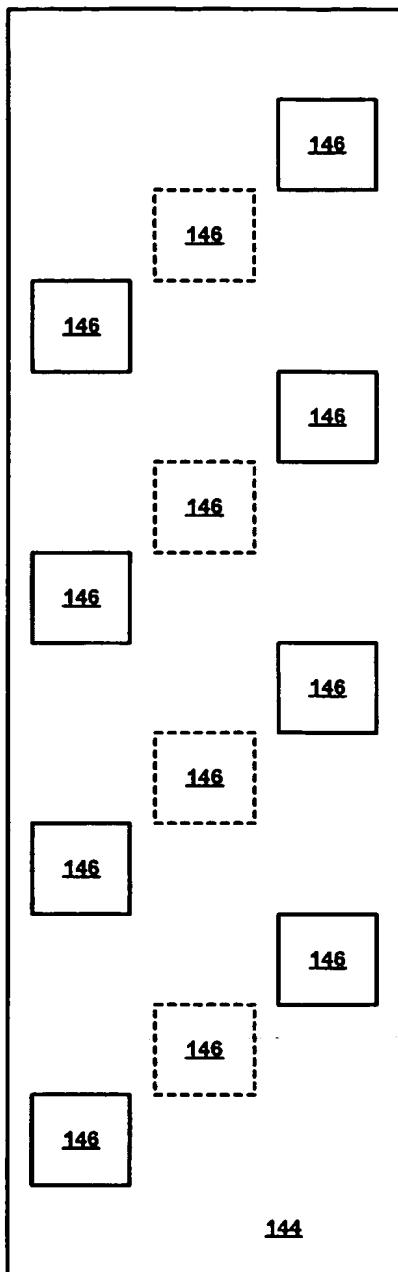
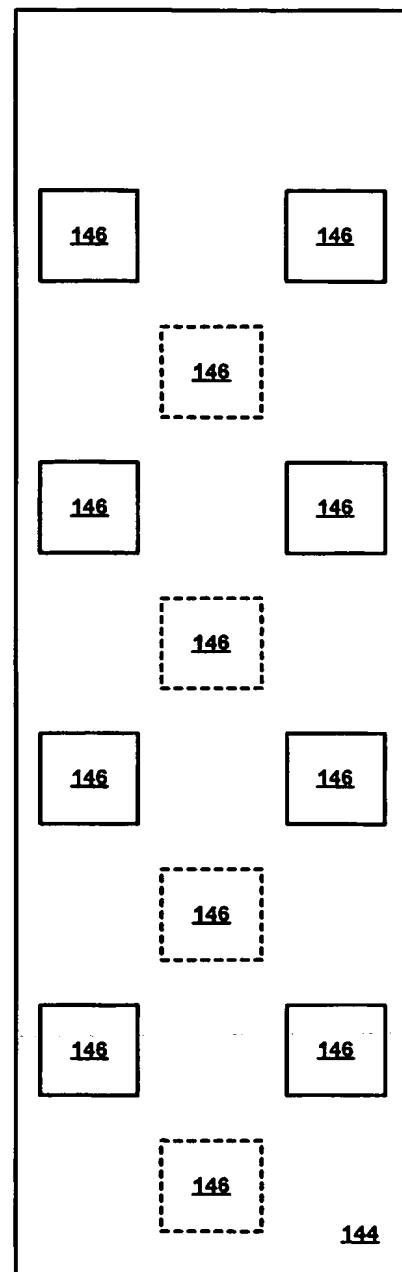


Fig. 6

**Fig. 7A****Fig. 7B****Fig. 7**

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/17840A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E21B43/11 E21B17/10 E21B43/08 E21B43/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 49894 A (BAKER HUGHES INC) 31 December 1997 (1997-12-31) See abstract page 5, line 8 - line 13 page 26, line 13 -page 27, line 7; figures 1,4,6	1,3,4, 15,16
Y	—	2,8-11
Y	US 5 228 518 A (MORAN LARRY K ET AL) 20 July 1993 (1993-07-20) column 7, line 27 - line 38; figures 2,5	2,9
Y	US 2001/036905 A1 (MORRIS ELIZABETH W A ET AL) 1 November 2001 (2001-11-01) paragraph '0003! - paragraph '0008! —	8-11
	—/—	

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search 25 September 2003	Date of mailing of the international search report 01/10/2003
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Dantinne, P

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/17840

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 26350 A (BAKER HUGHES INC) 29 August 1996 (1996-08-29) cited in the application See abstract figure 4 ---	1,3,4, 15,16
A	US 6 237 688 B1 (BURLESON JOHN D ET AL) 29 May 2001 (2001-05-29) See abstract figure 2 ---	1,8,15
A	US 5 425 424 A (REINHARDT PAUL A ET AL) 20 June 1995 (1995-06-20) cited in the application figures 3,5,11 ---	1,8,15
A	EP 0 909 877 A (HALLIBURTON ENERGY SERV INC) 21 April 1999 (1999-04-21) column 8, line 10 - line 14; figure 3 ----	1,8,15

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/17840

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9749894	A 31-12-1997	US 5829520 A		03-11-1998
		AU 3498997 A		14-01-1998
		CA 2259176 A1		31-12-1997
		EP 0906491 A1		07-04-1999
		GB 2352463 A , B		31-01-2001
		GB 2350634 A , B		06-12-2000
		GB 2331314 A , B		19-05-1999
		NO 986115 A		23-02-1999
		NO 20030432 A		23-02-1999
		NO 20030433 A		23-02-1999
		NO 20030434 A		23-02-1999
		WO 9749894 A1		31-12-1997
US 5228518	A 20-07-1993	AU 2644392 A		27-04-1993
		CA 2117086 A1		01-04-1993
		EP 0604526 A1		06-07-1994
		NO 940920 A		23-03-1994
		US 5379838 A		10-01-1995
		US 5346016 A		13-09-1994
		WO 9306333 A1		01-04-1993
US 2001036905	A1 01-11-2001	AU 3700901 A		27-08-2001
		AU 4062501 A		27-08-2001
		BR 0108342 A		11-03-2003
		CN 1418283 T		14-05-2003
		WO 0161148 A2		23-08-2001
		GB 2376254 A		11-12-2002
		GB 2377242 A		08-01-2003
		NO 20023896 A		16-10-2002
		NO 20023897 A		16-10-2002
		WO 0161147 A1		23-08-2001
		US 2001047867 A1		06-12-2001
WO 9626350	A 29-08-1996	AU 5096096 A		11-09-1996
		WO 9626350 A1		29-08-1996
		US 5829520 A		03-11-1998
US 6237688	B1 29-05-2001	NONE		
US 5425424	A 20-06-1995	CA 2142917 A1		29-08-1995
		DE 19506794 A1		31-08-1995
		DK 19795 A		29-08-1995
		GB 2286846 A , B		30-08-1995
		NO 950742 A		29-08-1995
EP 0909877	A 21-04-1999	US 6026915 A		22-02-2000
		AU 742449 B2		03-01-2002
		AU 8929698 A		06-05-1999
		CA 2250317 A1		14-04-1999
		EP 0909877 A1		21-04-1999
		NO 984772 A		15-04-1999